

H.A

**Notice of Allowability**

Application No.

10/741,490

Examiner

Jeff Natalini

Applicant(s)

POTEMPA, EDWARD M.

Art Unit

2858

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to \_\_\_\_\_.
2. ☒ The allowed claim(s) is/are 1-3.
3. ☒ The drawings filed on 19 December 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

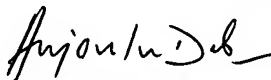
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |



**ANJAN DEB**  
**PRIMARY EXAMINER**

### Reasons For Allowance

The following is an examiner's statement of reasons for allowance:

In regard to claim 1, the prior art does not teach or render obvious where a predetermined current is drawn across a battery cell, in a string of battery cells, to measure a voltage across that cell and a second cell, then a second predetermined current is drawn across the second cell and a voltage across the first and second cells is measured, in order to derive the following formulas:

$$I_1 = V_{1,2}/Z_1 + V_{2,1}/Z_2$$

$$I_2 = V_{1,2}/Z_1 + V_{2,2}/Z_2$$

then using these formulas to calculate a the internal impedance of these two cells and an impedance multiplier using the following formula

$$IM = (Z_2 I_1) / (I_2 Z_2 - V_{2,2})$$

wherein this calculated impedance multiplier is used to calculate the impedance of each of the remaining battery cells in the at least one string and the combination as claimed.

Claims 2-3 are allowable as they depend from an allowable claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

The closest prior art is as follows:

**Puchianu (6404166)** discloses producing a current through each cell and measuring individually the voltage across the cell to determine the internal resistance of the cell. Puchianu lacks any teaching of an impedance multiplier while calculating the resistance of the battery cells.

**Ichimura et al. ("Measuring the Internal Resistance of a Cell in Assembled Batteries")** discloses a method for determining actual internal resistance of individual cells in a battery using a correction factor, this correction factor is divided into the measured value of impedance to determine the actual impedance.

The correction value  $(F) = (mn - m + 1) / mn$

Where  $m$  is the number of cells in parallel and  $n$  is the number of cells in series. Lacking is any motivation/reason for one skilled in the art to derive from this formula the formula for the impedance multiplier in the instant application for determining the impedance of each battery cell.

**Stephens (5485090)** discloses where the internal resistance of the battery is indicated by using the internal resistance's relationship to the ratio of voltage to current differential.

**Suzuki (6747457)** teaches using a ratio of calculated resistance to determine the deterioration of the battery; the ratio comprises internal no-load resistance to charge resistance.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Natalini whose telephone number is 571-272-2266. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff Natalini



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